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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/015,063	12/11/2001	James R. Heath	0180.0001	7255

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EXAMINER

LE, THAO P

ART UNIT PAPER NUMBER

2818

DATE MAILED: 05/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/015 063

Applicant(s)

HEATH ET AL

Examiner

Thao P Le

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133)
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 29 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 13-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 12/22/02 was filed after the mailing date of the Application on 12/11/01. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.
2. Examiner took notice of amendment and remarks made on 04/29/03.
Claims 1-12, 24 were cancelled.
Claims 13, 14, 21 were amended.
Claims 25-30 were amended.
3. Examiner withdrew the restriction of species (species I: claims 13-20 and species II: claims 21-23) since these two species are closely related to each other.
4. Claims 13-23, 25-30 are pending in this application.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 13-16, 18 and 21-23, 25-26, 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Chen, U.S. Patent No. 6,432,740.

Regarding to claims 13 and 21, Chen discloses an assembly for use in making a molecular electronic device similar to what recited in claims 13 and 21. See Figs. 1-5 and Cols. 1-8. Chen discloses the molecular electronic device comprising a substrate, a first electrode 12 located on the substrate whereas the substrate contains plurality of electrodes 12 (lines 53-58, Col. 5), a layer of molecular 16 having an electrical characteristic which has been deposited onto the substrate surface to form a molecular layer which covers the substrate surface including all the first electrodes (lines 56-57, Col. 5; Abstract), a layer of electrically conductive material 16 deposited on the molecular layer and the electrically conductive protective layer having an exposed surface on which a second electrode 14 is formed (lines 56-65, Col. 5; Abstract). Still

regarding to claim 21, Chen discloses the first and second electrodes have interior surface (Figs. 4a, 4b) and the layer of molecules 16 located adjacent to the layer of electrically conductive material 24 (Fig. 4b) and both layers are sandwiched between the first and second electrodes (Fig. 4b).

Regarding to claim 14, Chen discloses that the assembly disclosed above is for use in making a molecular electronic device, and the assembly further comprises a second electrode which has been formed on the electrically conductive protective layer and whereas the second electrode overlaps the first electrode (Col. 5, Figs. 4a, 4b).

Regarding to claims 15, 25, Chen discloses that the substrate comprises a material that commonly employed in semiconductor fabrication, such as, semiconductor, silicon nitride, crystalline, sapphire, silicon dioxide, or the like (lines 58-63, Col. 4).

Regarding to claims 16, 26, Chen discloses that the molecular layer comprises bi-stable switching molecules selected from the group consisting of rotoxanes, catenanes, and pseudorotaxanes (Cols. 3-8; lines 1-10, Col. 4).

Regarding to claims 18, 28, Chen discloses that the molecular material is formed as a Langmuir-Blodgett molecular monolayer or multiplayer film (lines 7-9, Col. 7).

Regarding to claim 22, Chen discloses that the molecules have the electrical characteristic of bi-stable switching (1-10, Col. 4).

Regarding to claim 23, Chen discloses that the first and second electrode are measured in nanometer (lines 25-34, Col. 1).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 17, 19, 20, and 27, 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen, U.S. Patent No. 6,432,740.

Regarding to claims 17, 27, Chen discloses the assembly similar to the assembly accordance with claim 13, and further discloses that electrically conductive material is made of metal or semiconductor (line 62, Col. 5). However, Chen doesn't disclose that the metal or semiconductor conductive material is titanium or chromium. It would have been inherent to one having skill in the art that titanium or chromium is considered as metal and commonly used as conductive material. It would have been obvious that either titanium or chromium would have been selected for forming the conductive material that disclosed in Chen's.

Regarding to claims 19-20, 29-30, Chen discloses the assembly similar to the assembly accordance with claim 13, and further discloses that bottom electrode and top electrode are made of metal or semiconductor (lines 55-56, Col. 5). However, Chen doesn't disclose that Al, gold, Co, Iron, Ag, Ti, Cu, Pt, Pd, alloys, silicon or alike are used to form the electrodes. It would have been inherent to one having skill in the art

that those chemical listed above considered as metal or semiconductor material and they are commonly used to made electrodes. It would have been obvious that either Al, gold, Co, Iron, Ag, Ti, Cu, Pt, Pd, alloys, or silicon etc.... would have been selected to form electrodes that disclosed in Chen's.

If Applicants are aware of better art than that which has been cited, they are required to call such to attention of the examiner.

Conclusion

9. This office action is made **FINAL**.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao P. Le whose telephone number is 703-605-1187. The examiner can normally be reached on Monday-Thursday 7:30am-6: 30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on 703-308-4910. The fax phone numbers for the

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organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Thao Phuong Le

Examiner



David Nelms
Supervisory Patent Examiner
Technology Center 2800